SUPPORT FOR THE AMENDMENTS

The amendments to Claims 7 and 21 are supported by the specification at pages 6-17. No new matter is believed to have been added to this application by these amendments.

REMARKS

Claims 7-42 remain pending.

The present invention relates to an immunoassay for detecting an antigen in a sample. An important feature of the present method is that two antibodies are used to bind the antigen, and each antibody is contacted with the sample sequentially to form an agglutinate comprising the antigen and the two antibodies (see (i) and (ii) in Claims 7 and 21). Another important feature is that the antigen is apoprotein B, HbA_1C, serum amyloid A protein, or thrombin-antithrombin III complex.

The present inventors have discovered that this two-step antibody binding reaction provides a assay method having high sensitivity and low cost.

The rejection of the claims under 35 U.S.C. §103(a) over Strahilevitz (U.S. Patent No. 4,375,414) in view of Schmidtberger or Young et al. is respectfully traversed. These references fail to suggest the claimed immunoassay method.

Strahilevitz describes immunoassays of psychoactive drugs (see the Abstract). The reference fails to describe apoprotein B, HbA_1C, serum amyloid A protein, or thrombin-antithrombin III complex as the antigen to be detected by the assay described therein. Moreover, there is no suggestion or motivation from Strahilevitz to detect those antigens.

Schmidtberger describes an aggultination assay using antibodies which are specific for apoprotein B (see the Abstract and columns 1-2). This reference fails to describe the use of antibodies to assay for psychoactive drugs.

Young et al. describe two hybridomas which produce antibodies which immunoreact with apoprotein B and can be used as a diagnostic for the same (see the Abstract and columns 3-5). This reference fails to describe the use of antibodies to assay for psychoactive drugs.

The Examiner's rejection is based on the assertion that one of ordinary skill in the art would (1) modify the assay described in Strahilevitz so that apoprotein B was the assay target instead of the psychoactive drugs specified in that reference and (2) use the antibodies described in Schmidtberger or Young et al. in place of the antibodies described in Strahilevitz. See the Official Action dated June 16, 2002 at page 4, second paragraph.

However, the Examiner has not explained, in any fashion whatsoever, ***why*** one would be motivated to make these modifications. Without such an explanation, the rejection is unsustainable for this ground alone.

The fact of the matter is that Schmidtberger and Young et al. each describe a method of using antibodies to assay for apoprotein B. Strahilevitz, on the other hand, describes a method of assaying for psychoactive drugs, not apoprotein B. The Examiner has provided no explanation ***why*** one would be motivated to modify the psychoactive drug assay method described in Strahilevitz to target apoprotein B based on the teachings of Schmidtberger or Young et al. when the latter two references themselves relate to an assay for apoprotein B.

In view of the foregoing, Claims 7, 10-13, and 18-19 are not obvious over Strahilevitz in view of Schmidtberger or Young et al. Withdrawal of this ground of rejection is respectfully requested.

The rejection of Claims 21-27, 29, 30, and 32-34 under 35 U.S.C. §103(a) over Boehringer Mannheim GMBH (EP 617 285, hereinafter referred to as "EP '285") in view of Schmidtberger or Young et al. is respectfully traversed. These references fail to suggest the claimed immunoassay method.

EP '285 describes a method for reducing the Hook effect in immunoassays with particulate carriers (see the Title and the Abstract).

Schmidtberger describes an aggultination assay using antibodies which are specific for apoprotein B (see the Abstract and columns 1-2).

Young et al. describe two hybridomas which produce antibodies which immunoreact with apoprotein B and can be used as a diagnostic for the same (see the Abstract and columns 3-5).

The Examiner has failed to provide any evidence to demonstrate that one skilled in the art would have a reasonable expectation that the antibodies described in Schmidtberger or Young et al. would actually work in the assay described by EP '285 and reduce the Hook effect. In the absence of this evidence, the rejection is unsustainable and must be withdrawn.

The rejection of Claims 7-16, 18-30, 32-35, and 39 under 35 U.S.C. §103(a) over Cragle et al. in view of Strahilevitz, EP '285, Schmidtberger, and Young et al. is respectfully traversed. These references fail to suggest the claimed immunoassay method.

Cragle et al. describe an immunoassay method (see the Abstract). The reference fails to describe apoprotein B, HbA_1C, serum amyloid A protein, or thrombin-antithrombin III complex as the antigen to be detected by the assay described therein.

Strahilevitz describes immunoassays of psychoactive drugs (see the Abstract). The reference fails to describe apoprotein B, HbA_1C, serum amyloid A protein, or thrombin-antithrombin III complex as the antigen to be detected by the assay described therein. Moreover, there is no suggestion or motivation from Strahilevitz to detect those antigens.

EP '285 describes a method for reducing the Hook effect in immunoassays with particulate carriers (see the Title and the Abstract).

Schmidtberger describes an aggultination assay using antibodies which are specific for apoprotein B (see the Abstract and columns 1-2).

Young et al. describe two hybridomas which produce antibodies which immunoreact with apoprotein B and can be used as a diagnostic for the same (see the Abstract and columns 3-5).

The Examiner acknowledges that Cragle et al. fails to describe, *inter alia*, (1) sequential contact of two antibodies and (2) the use of antibodies specific for apoprotein B.

The Examiner asserts that it would obvious to one of ordinary skill to modify the method described in Cragle et al. to include (1) in view of the teachings of Strahilevitz or EP '285 and to include (2) based on the teachings of Schmidtberger or Young et al. See the Official Action dated July 16, 2002 from the last full paragraph at page 6 to the end of the paragraph bridging page 7.

However, the Examiner has provided no evidence as to ***why*** one would be motivated to make either of these modifications to the assay describe in Cragle et al. The Examiner has simply stated that the modifications would "be obvious to one of ordinary skill in the art." Without such evidence, no motivation has been established which would render the claimed immunoassay obvious in view of the cited references. Accordingly, the rejection is unsustainable and should be withdrawn

Withdrawal of this ground of rejection is respectfully requested.

The rejection of the claims under 35 U.S.C. §112, second paragraph, is believed to be obviated by the amendment submitted above. Claims 7 and 21 as amended recite a correlation step. Therefore, the claims are definite within the meaning of 35 U.S.C. §112, second paragraph. Accordingly, withdrawal of this ground of rejection is respectfully requested.

Applicants submit that the present application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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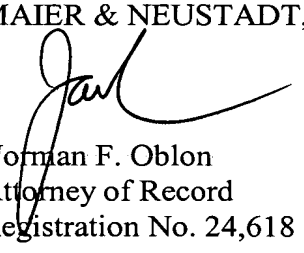

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Serial No.: 08/893,759
Amendment Filed On: Herewith

IN THE CLAIMS

--7. (Twice Amended) An agglutination immunoassay for detecting an antigen in a sample, comprising:

(a) sequentially contacting the sample with

(i) a first antibody which is capable of specifically binding to a first binding site on the antigen, wherein the first antibody is immobilized on an insoluble carrier, and then

(ii) a second antibody which is capable of specifically binding to a second binding site on the antigen, wherein the second antibody is free,

thereby forming, when the antigen is present in the sample, an agglutinate comprising the first antibody, the antigen, and the second antibody; followed by

(b) optically measuring the amount of the agglutinate formed in (a),

wherein the antigen is apoprotein B, HbA_1C, serum amyloid A protein, or thrombin-antithrombin III complex

[wherein one of the antibodies has high specificity for the antigen while the other antibody does not have strict specificity for the antigen].

21. (Twice Amended) An agglutination immunoassay for detecting an antigen in a sample, comprising:

(a) sequentially contacting the sample with

(i) a first antibody which is capable of specifically binding to a first binding site on the antigen, wherein the first antibody is free, and then

(ii) a second antibody which is capable of specifically binding to a second binding site on the antigen, wherein the second antibody is immobilized on an insoluble carrier,

thereby forming, when the antigen is present in the sample, an agglutinate comprising the first antibody, the antigen, and the second antibody; followed by

(b) optically measuring the amount of the agglutinate formed in (a),

wherein the antigen is apoprotein B, HbA_1C, serum amyloid A protein, or thrombin-antithrombin III complex

[wherein one of the antibodies has high specificity for the antigen while the other antibody does not have strict specificity for the antigen].--